FIST

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The Requirement

Conduct DCC

Move

Find

Engage

Soldier as a System.....

Section as a Platform.....

FIST PARTNERING

- Defence Procurement Agency
- Prime Contractor – Thales
- Defence Science Technology Laboratories
- QintiQ
- Director of Infantry
- Infantry Trials and Development Unit

The Aim

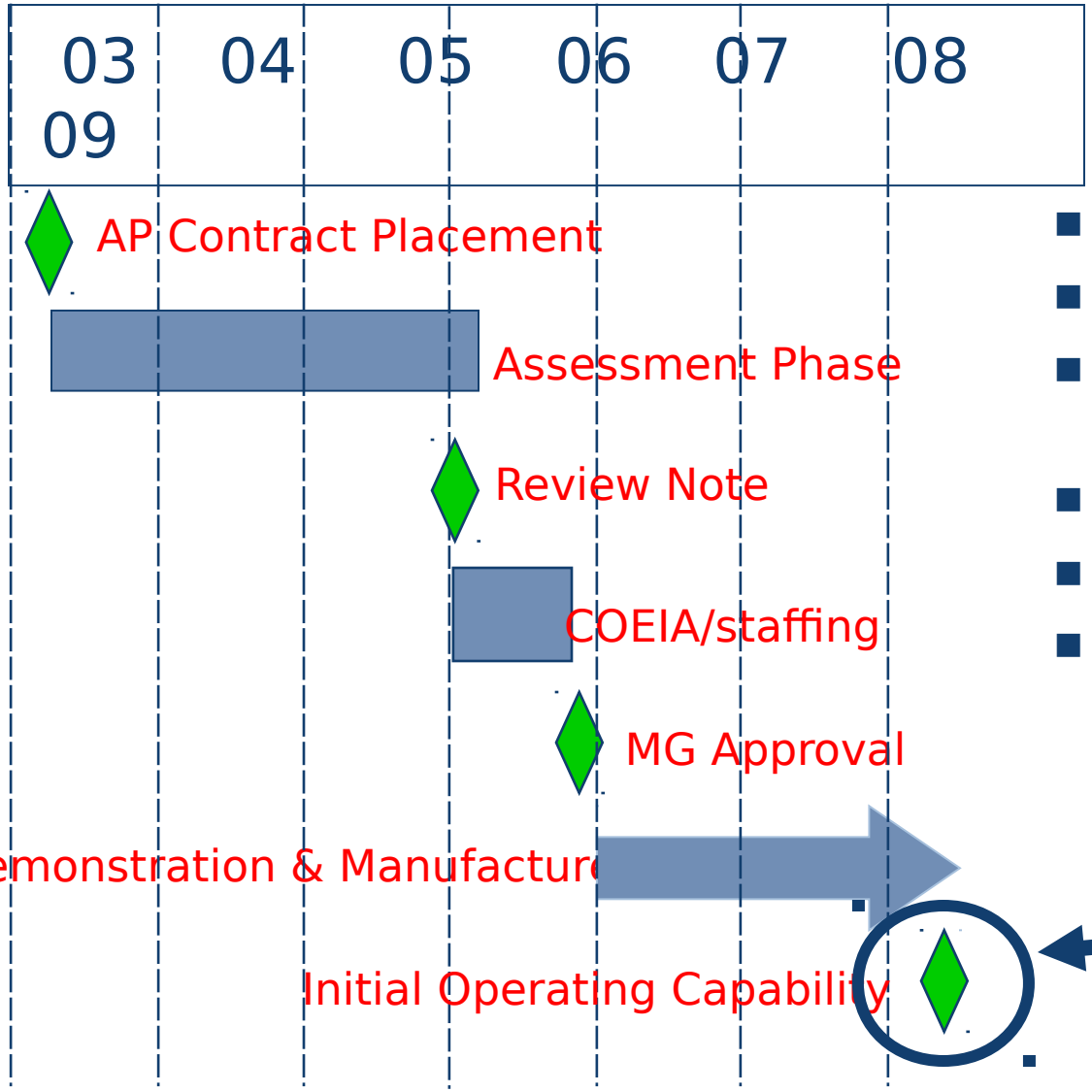
- To give an update on the FIST programme

- To brief our emerging view of what the FIST system may look like

Update

- Progress
  - The AP Programme
  - V1 versus V2 versus FIST 1 – what does it all mean?
  - Develop Methodology
- OA Results
- Trials Feedback

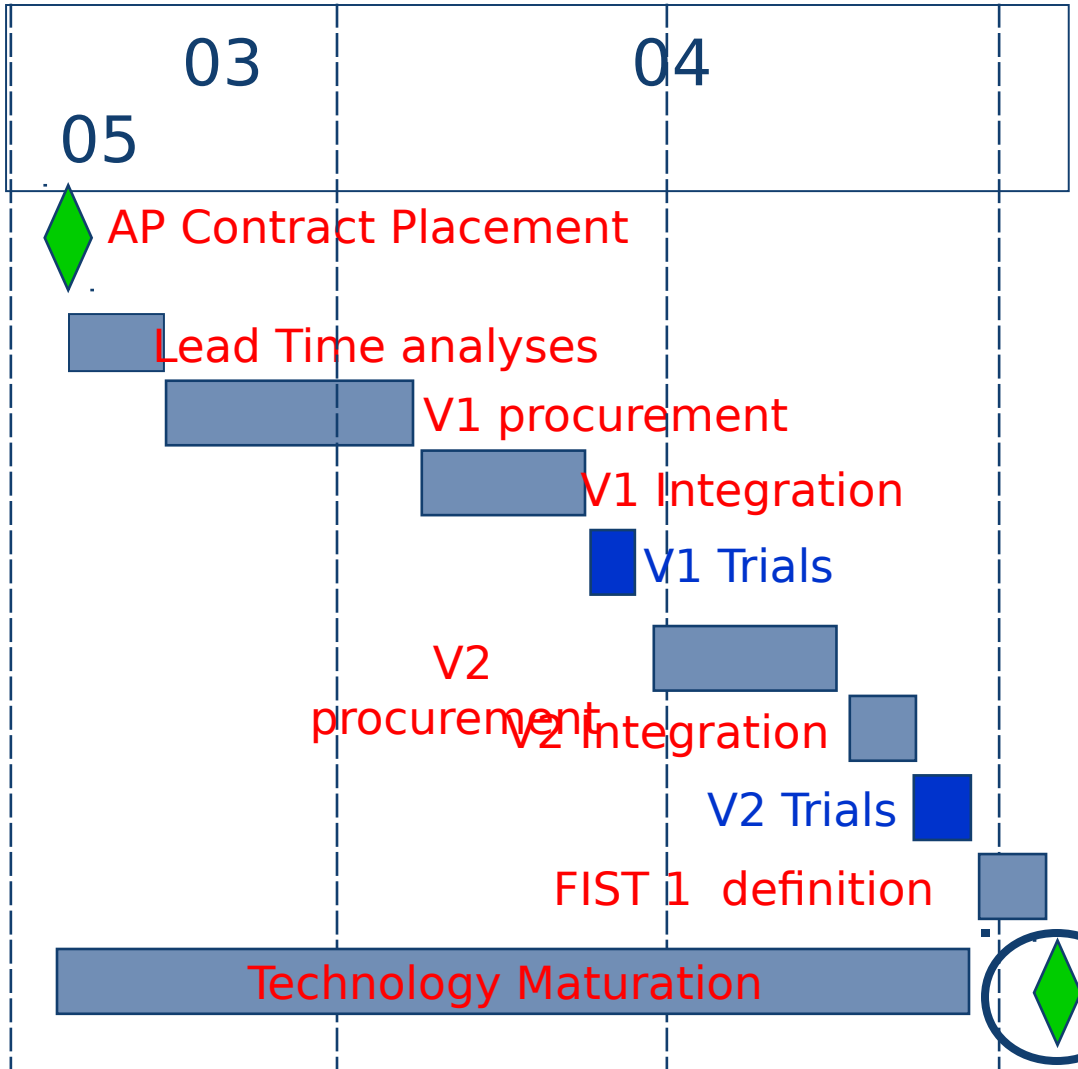
The FIST AP Programme (1/2)



- A 3 year AP programme
- Production Phase 2007
- Initial Operating Capability 2009
- 29,861 Systems
- Equipment Acquisition £584M
- WLC £2800M (incl. £584M capital)

Brigade Level Operation

The FIST AP Programme (2/2)



- **A £15M (AP) programme**
- **AP start April 03**
- **V1 trials Sept/Oct 04**
- **V2 trials Oct/Nov 05**

Business Case development and supporting data for Main Gate

V1 - V2 - FIST1

- "FIST1" is the system to be brought into service (2009)

- The "V's" in the earlier trials systems refer to classic Systems Engineering "V's"

- "V1" is an early experimental system for trials (2004) to assist in understanding the Requirements

- "V2" is system for final AP trials (late 2005) and will provide a close representation of the form & functionality of the FIST1 system

Development of Methodology

- FIST Assessment Phase based on a high level, non-prescriptive User Requirement Document
- How do we “Trade” to get optimum System Requirement Document
- There were no standard processes for this at start of Assessment Phase
  - Understanding of system issues was limited
  - Relationship between modelling and trials was undeveloped
  - No capability trade off process
  - Trials methodology existed but required maturing
- Processes have been developed to tackle all of these issues
- Details on these various processes have been presented before
- This presentation will concentrate on the results to date.

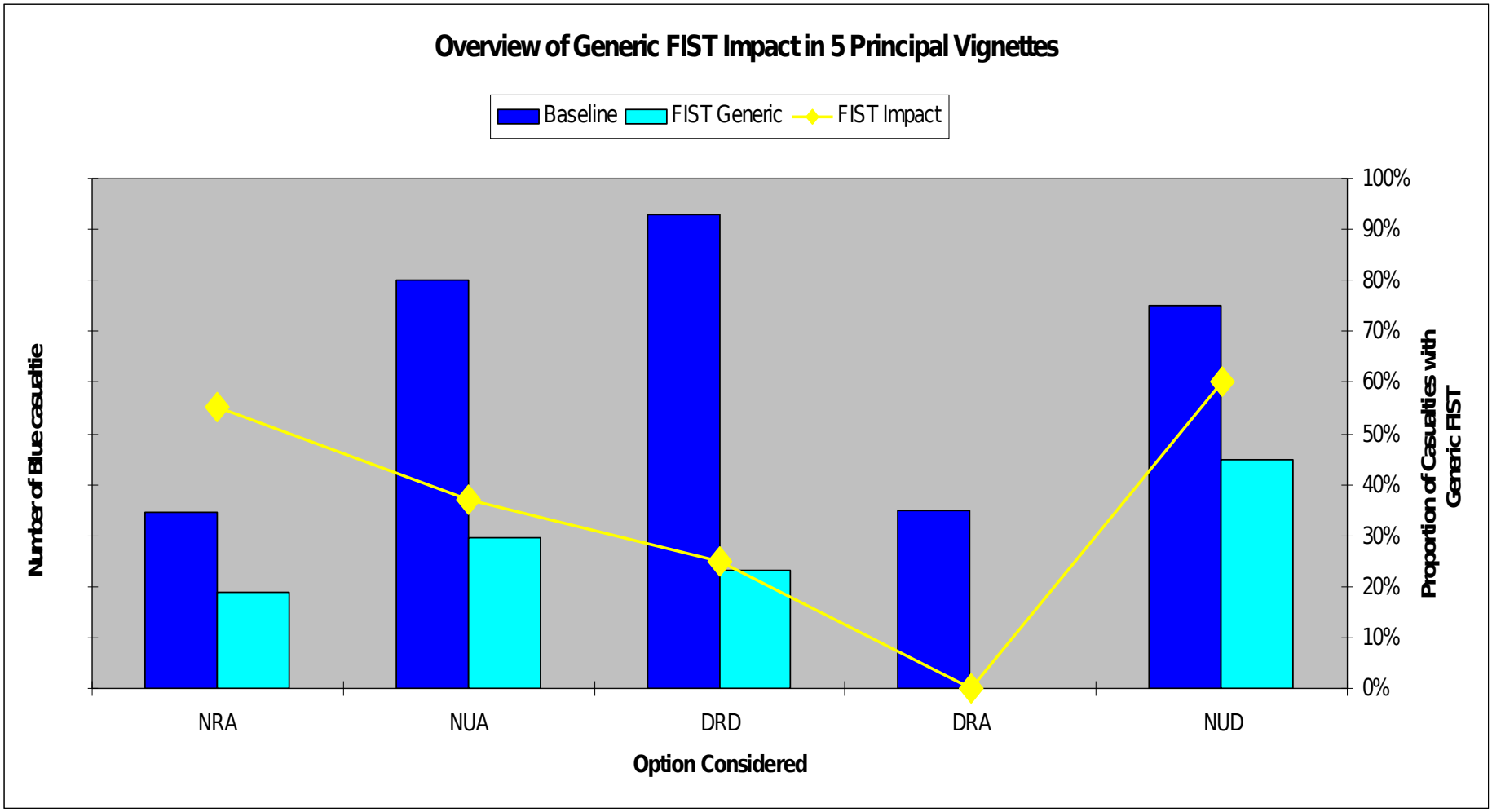
Assessment of candidate systems

Using full range of available tools:

- CAEn modelling – "in-contact"
- Mini-trials and large scale trials
- Military Judgement Panels (MJP) in "ABEL" modelling - "out-of-contact"
- User feedback (especially recent DCC activity)

Each tool has strengths & weaknesses – but the combination is extremely effective

OA Results - Review of FIST Impact



OA Results - Review of FIST Impact

- FIST delivers benefits across the whole range of vignettes assessed
- FIST solutions are also showing very significant time savings
  - In-contact time savings in a number of vignettes
  - Major out-of-contact time savings
- FIST makes users more robust to some impacts of stress & fatigue
- However more work is needed to confirm these initial results

Early Feedback from BF2 Trials - C4I

Reporting

- Passage of Orders – quicker and more accurate
- Reduced time to communicate tactical information (range/bearing).
- Would not replace face-to-face brief of battle orders

Navigation

- Strongly liked – effortless location of Self, Section and next Way-Point
- Casualty finding and Actions-on-Separated at night
  - Private soldier can re-locate Section and rendezvous point using FIST rather than memory – higher success rate & faster
  - Identify & locate casualties faster and more accurately

Early Feedback from BF2 Trials - C4I

Situational Awareness

- Not all soldiers need full C4I.
- Majority of data comms traffic was observed during planning, manoeuvre and at the Line-of-Departure
- Any potential FIST C4I equipment needs to be small to be retained in Assault Order.
- Some soldiers spent more time observing own Section than looking for enemy

Early Feedback from BF2 Trials - STA

Surveillance & Target Acquisition Summary

- Thermal capability strongly liked: both as weapon sight and hand-held

Magnified Daylight Sights

- Red dot was liked
- X1 mag preferred in Urban Ops
- X3 mag preferred in Rural Ops
- X1 => 4 varying mag – liked, but issues with speed of target acquisition
- X1,8=>10 varying mag – too large & heavy – restricted FOV

Helmet Mounted Displays

- ISSUES: Eye relief, Headaches, Loss of night vision (both eyes)

- Potential means to access C4I without signature is needed

Early Feedback from BF2 Trials - General

Batteries

- Centralised system, 2x packs issued per system, per vignette – no significant issues

Cables & Connectors

- Weapon-to-torso cable not liked and link had high attrition rate

- Wireless investigation still on-going – but there are major issues

Emerging view of what the FIST system may look like

Section as System – distribution of functionality

- cannot give everything to everybody – due to weight

- retain current Lethality assets
- distribute functionality across the team
- two symmetric fire teams
- each fire team comprises:
  - Commander (Cdr) — IW (Individual Weapon)
  - Grenadier (Gdr) — IW & UGL (Underslung Grenade Launcher)
  - Gunner (Gnr) — LMG (Light Machine Gun)
  - Marksman (Mkn) — LSW (Light Support Weapon)

Section as System – distribution of functionality

- C4I
  - Use of OA tools & Trade-Off process to develop optimum mix
  - Strong focus on improved C4I & improved STA
  - Focus on reducing Commanders' workload
  - Only limited C4I inside each fire team
    - **reduce training load**
    - **reduce power consumption**
- Sights
  - Distributed Sights – II & TI
  - Match to weapon ranges

Core Elements - that everybody gets

- Helmet
- Load carriage
- Wiring loom (Infrastructure)
- Voice & Data Radio (intra-section)
- Audio headset
- Body Armour (incl. plates)
- Ocular protection
- GPS
- Night Vision Goggles
- Limited Information Processing
- Power unit

also
Clothing upgrade

Lethality Elements

SA 80 A2 to “A3” - differences.

- Weapon Link (data/power)
- Sight(s)
- Weapon Control Unit
- Ammo load (body worn)

Also applies to other section weapons

Other modules:

- laser aimer / torch
- Laser Range Finder (LRF)
- Digital Magnetic Compass (DMC)

Commander System

Core System
plus
SA-80 IW A3* & modules
plus

- Soldier Processing Computer (SPC)
- Cmdr Radio (intra-company)
- Audio headset
- HDD (Head Down Display)
- LRF/DMC Bino’s
- Torso Control Unit

Optional:
- HUD (Head Up Display or HMD)
- Planning Display

Specialist Systems

Core System
plus
weapon
plus

For specialists

different configurations (C4I modules, Load carriage etc.) to accommodate…

- Mortar Fire Controller
- Forward Observation Officer
- Forward Air Controller
- Royal Engineers (Assault Pioneers)
- Medics
- etc.

Key Risks

- Troop availability – Current Operations
- Portable Power
- Wider Integration
- Retaining Funding

Summary

- Real advances have been made in the last 18 months
- FIST can be made useable for the ordinary soldier
- It shows real promise for improving capability at soldier level
- Integration as a fact of life
- Only the first step in developing a modern soldier system